

217/782-2113

CONSTRUCTION PERMIT

PERMITTEE

Quebecor World, Chicago Division  
Attn: George W. Forst  
2000 Arthur Avenue  
Elk Grove Village, Illinois 60007-6071

Application No.: 03110035                      I.D. No.: 031440AAB  
Applicant's Designation: PRESS37        Date Received: November 18, 2003  
Subject: Lithographic Printing (Press 37)  
Date Issued: ---  
Location: 2000 Arthur Avenue, Elk Grove Village

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a heatset web offset lithographic printing line (press 37) controlled by an existing oxidizer system as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1.0 Unit Specific Conditions

1.1 Unit: Heatset Web Offset Lithographic Printing Line  
Control: Oxidizer System

1.1.1 Description

The process uses the heatset web offset lithographic printing method to print ink onto a paper web and pass the web through a dryer to drive off the ink oil. The evaporated ink oil is then controlled by an oxidizer system before being discharged to the atmosphere through a stack.

1.1.2 List of Emission Units and Air Pollution Control Equipment

Emission Unit	Description	Emission Control Equipment
Press 37	Heidelberg Heatset Web Offset Lithographic Printing Press with Dryer	Oxidizer System

1.1.3 Applicability Provisions and Applicable Regulations

- a. An "affected printing line" for the purpose of these unit-specific conditions, is a heatset web offset lithographic printing line as described in Conditions 1.1.1 and 1.1.2.

- b. The affected printing line is subject to 35 IAC 212.321(a), which provides that the Permittee shall not cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit, either alone or in combination with the emission of particulate matter from all other similar process emission units for which construction or modification commenced on or after April 14, 1972, at a source or premises, exceeds the allowable emission rates specified in subsection (c) of 35 IAC 212.321 [35 IAC 212.321(a)].
- c. The Permittee shall not cause or allow the emission of sulfur dioxide into the atmosphere from any process emission unit to exceed 2000 ppm [35 IAC 214.301].
- d. The affected printing line is subject to 35 IAC 218 Subpart G, Use of Organic Material, which provides that:
  - i. The Permittee shall not cause or allow the discharge of more than 3.6 kg/hr (8 lb/hr) of organic material into the atmosphere from any emission unit, except as provided in Condition 1.1.3(d)(ii) (see also 35 IAC 218.302) and the following exception: If no odor nuisance exists the limitation of this Condition shall apply only to photochemically reactive material [35 IAC 218.301].
  - ii. Emissions of organic material in excess of those permitted by Condition 1.1.3(d)(i) (see also 35 IAC 218.301) are allowable if such emissions are controlled by flame, thermal or regenerative incineration so as either to reduce such emissions to 10 ppm equivalent methane (molecular weight 16) or less, or to convert 85 percent of the hydrocarbons to carbon dioxide and water [35 IAC 218.302(a)].
- e. Pursuant to 35 IAC 218.407(a), the Permittee shall not:
  - i. Cause or allow the operation of the affected printing line unless:
    - A. The total VOM content in the as-applied fountain solution is 5 percent or less, by volume, and the as-applied fountain

solution contains no alcohol [35 IAC 218.407(a) (1) (A) (iii)];

- B. The air pressure in the dryer is maintained lower than the air pressure of the press room, such that air flow through all openings in the dryer, other than the exhaust, is into the dryer at all times when the printing line is operating [35 IAC 218.407(a) (1) (B)];
  - C. An oxidizer is installed and operated so that VOM emissions (excluding methane and ethane) from the press dryer exhaust(s) are reduced by 98 percent, by weight.
  - D. The oxidizer is equipped with the applicable monitoring equipment specified in Condition 1.1.8(d) (see also 35 IAC 218.105(d) (2)) and the monitoring equipment is installed, calibrated, operated, and maintained according to manufacturer's specifications at all times when the oxidizer is in use [35 IAC 218.407(a) (1) (D)]; and
  - E. The oxidizer is operated at all times when the printing line is in operation [35 IAC 218.407(a) (1) (E)].
- ii. Cause or allow the use of a cleaning solution on the affected printing line unless the VOM composite partial vapor pressure of the as-used cleaning solution is less than 10 mmHg at 20°C (68°F) [35 IAC 218.407(a) (4) (B)].
  - iii. Cause or allow VOM containing cleaning materials, including used cleaning towels, associated with the affected printing line to be kept, stored or disposed of in any manner other than in closed containers [35 IAC 218.407(a) (5)].

#### 1.1.4 Non-Applicability of Regulations of Concern

- a. The affected printing line is not subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for the Printing and Publishing Industry, 40 CFR 9 and 63, Subparts A and KK, because the affected printing line is not publication rotogravure, product and packaging rotogravure, or

wide-web flexographic printing presses and the source is not a major source of HAPs.

- b. The affected printing line is not subject to 35 IAC 218.204(c), Coating Operations/Paper Coating, as the paper coating limitation does not apply to a line on which printing is performed which complies with the emission limitations in 35 IAC 218 Subpart H: Printing and Publishing [35 IAC 218.204(c)].

#### 1.1.5 Control Requirements

- a. The oxidizer system shall be operated to achieve at least 98 percent destruction efficiency for VOM.
- b. The oxidizers' combustion chambers shall be preheated to the manufacturer's recommended temperature but no less than the temperature at which compliance was demonstrated in the most recent compliance test, before the printing process is begun, and this temperature shall be maintained during operation of the affected printing line.
- c. The Permittee shall follow good operating practices for the oxidizers, including periodic inspection, routine maintenance and prompt repair of defects.
- d. The affected printing line shall only be operated with natural gas as the fuel in the press dryer and the oxidizers.
- e. The affected printing line shall not exceed ink usage of 130 tons/month and 1,085 tons/year.

#### 1.1.6 Emission Limitations

The affected printing line is subject to the following:

- a. Emissions from the affected printing line shall not exceed 3.4 tons per month and 34.06 tons per year. These limits are based on the maximum material usage and emission factors and formulas in Condition 1.1.12.
- b. Compliance with annual limits shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total).
- c. The source has addressed the applicability and compliance of 35 IAC Part 203, Major Stationary Sources Construction and Modification (See

Attachment 1). These limits continue to ensure that the construction addressed in this construction permit does not constitute a major modification pursuant to these rules.

#### 1.1.7 Testing Requirements

- a. Testing to demonstrate compliance with the requirements of Condition 1.1.3(e) (see also 35 IAC 218.407(a)) shall be conducted by the Permittee within 90 days after a request by the Illinois EPA. Such testing shall be conducted at the expense of the Permittee and the Permittee shall notify the Illinois EPA in writing 30 days in advance of conducting such testing to allow the Illinois EPA to be present during such testing [35 IAC 218.409(a)].
- b. Pursuant to 35 IAC 218.409(c), testing to demonstrate compliance with the VOM content limitations in Conditions 1.1.3(e) (i) (A) (see also 35 IAC 218.407(a) (1) (A)), and to determine the VOM content of fountain solutions, fountain solution additives, cleaning solvents, cleaning solutions, and inks (pursuant to the requirements of 35 IAC 218.411(a) (1) (B)), shall be conducted upon request of the Illinois EPA, as follows:
  - i. The applicable test methods and procedures specified in 35 IAC 218.105(a) shall be used; provided, however, Method 24 shall be used to demonstrate compliance [35 IAC 218.409(c) (1)]; or
  - ii. The manufacturer's specifications for VOM content for fountain solution additives, cleaning solvents, and inks may be used if such manufacturer's specifications are based on results of tests of the VOM content conducted in accordance with methods specified in 35 IAC 218.105(a); provided, however, Method 24 shall be used to determine compliance [35 IAC 218.409(c) (2)].
- c. Testing to determine the VOM composite partial vapor pressure of cleaning solvents, cleaning solvent concentrates, and as-used cleaning solutions shall be conducted in accordance with the applicable methods and procedures specified in 35 IAC 218.110 [35 IAC 218.409(e)].

#### 1.1.8 Monitoring Requirements

- a. Fountain Solution VOM Content. Pursuant to 35 IAC 218.410(b), the Permittee shall:
  - i. For a fountain solution to which VOM is not added automatically:
    - A. Maintain records of the VOM content of the fountain solution in accordance with Condition 1.1.9(b)(iii) (see also 35 IAC 218.411(c)(2)(C)) [35 IAC 218.410(b)(1)(A)]; or
    - B. Pursuant to 35 IAC 218.410(b)(1)(B), take a sample of the as-applied fountain solution from the fountain tray or reservoir, as applicable, each time a fresh batch of fountain solution is prepared or each time VOM is added to an existing batch of fountain solution in the fountain tray or reservoir, and shall determine compliance with the VOM content limitation of the as-applied fountain solution by using one of the following options:
      - 1. With a refractometer or hydrometer with a visual, analog, or digital readout and with an accuracy of 0.5 percent. The refractometer or hydrometer must be calibrated with a standard solution for the type of VOM used in the fountain solution, in accordance with manufacturer's specifications, against measurements performed to determine compliance. The refractometer or hydrometer must be corrected for temperature at least once per 8-hour shift or once per batch of fountain solution prepared or modified, whichever is longer [35 IAC 218.410(b)(1)(B)(i)]; or
      - 2. With a conductivity meter if it is demonstrated that a refractometer and hydrometer cannot distinguish between compliant and noncompliant fountain solution for the type and amount of VOM in the fountain solution. A source may use a conductivity meter if it demonstrates that both hydrometers and refractometers fail to provide significantly different

measurements for standard solutions containing 95 percent, 100 percent and 105 percent of the applicable VOM content limit. The conductivity meter reading for the fountain solution must be referenced to the conductivity of the incoming water. A standard solution shall be used to calibrate the conductivity meter for the type of VOM used in the fountain solution, in accordance with manufacturer's specifications [35 IAC 218.410(b)(1)(B)(ii)];

- ii. For fountain solutions to which VOM is added at the source with automatic feed equipment, determine the VOM content of the as-applied fountain solution based on the setting of the automatic feed equipment which makes additions of VOM up to a pre-set level. The equipment used to make automatic additions must be installed, calibrated, operated and maintained in accordance with manufacturer's specifications [35 IAC 218.410(b)(2)].
- b. Oxidizers. Pursuant to 35 IAC 218.410(c), the Permittee shall:
  - i. Install, calibrate, maintain, and operate temperature monitoring device(s) with an accuracy of 3°C or 5°F on the oxidizer in accordance with Condition 1.1.8(d) (see also 35 IAC 218.105(d)(2)) and in accordance with the manufacturer's specifications. Monitoring shall be performed at all times when the oxidizer is operating [35 IAC 218.410(c)(1)]; and
  - ii. Install, calibrate, operate and maintain, in accordance with manufacturer's specifications, a continuous recorder on the temperature monitoring device(s), such as a strip chart, recorder or computer, with at least the same accuracy as the temperature monitor [35 IAC 218.410(c)(2)].
- c. Cleaning Solution.

The Permittee shall keep records of cleaning solutions used on the affected printing line as set forth in Condition 1.1.9(c) (see also 35 IAC 218.411(d)(2)(C)) [35 IAC 218.410(e)(2)].

- d. The Permittee shall use Illinois EPA and USEPA approved continuous monitoring equipment which is installed, calibrated, maintained, and operated according to vendor specifications at all times the oxidizer is in use. [35 IAC 218.105(d) (2) (A) (ii)].

1.1.9 Recordkeeping Requirements

The Permittee shall maintain records of the following items for the affected printing line to demonstrate compliance with Conditions 1.1.3, 1.1.5, and 1.1.6:

- a. Pursuant to 35 IAC 218.411(b) (3), the Permittee shall collect and record daily the following information for the affected printing line:
  - i. Oxidizer monitoring data in accordance with Condition 1.1.8(b) (see also 35 IAC 218.410(c)) [35 IAC 218.411(b) (3) (A)];
  - ii. A log of operating time for the oxidizer, monitoring equipment, and the associated printing line [35 IAC 218.411(b) (3) (B)];
  - iii. A maintenance log for the oxidizer and monitoring equipment detailing all routine and non-routine maintenance performed, including dates and duration of any outages [35 IAC 218.411(b) (3) (C)]; and
  - iv. A log detailing checks on the air flow direction or air pressure of the dryer and press room to insure compliance with the requirements of Condition 1.1.3(e) (i) (B) (see also 35 IAC 218.407(a) (1) (B)) at least once per 24-hour period while the line is operating. If the printing presses are interlocked to the oxidizers such that a press cannot be operated unless the oxidizer(s) are operating and the dryers operate under negative air pressure (i.e. airflow is pulled from the dyers by the oxidizer fans), then logs addressing the inspection and maintenance of this interlock system along with charts indicating when the oxidizers are in operation, will satisfy the log requirements of this condition [35 IAC 218.411(b) (3) (D)].
- b. Pursuant to 35 IAC 218.411(c) (2), the Permittee, shall collect and record the following information for each fountain solution:



- i. The name and identification of each batch of fountain solution prepared for use on the affected printing line, the lithographic printing line(s) or centralized reservoir using such batch of fountain solution, and the applicable VOM content limitation for the batch [35 IAC 218.411(c) (2) (A)];
- ii. Pursuant to 35 IAC 218.411(c) (2) (B), if the Permittee uses a hydrometer, refractometer, or conductivity meter, pursuant to Condition 1.1.8(a) (i) (B) (see also 35 IAC 218.410(b) (1) (B)), to demonstrate compliance with the applicable VOM content limit in Condition 1.1.3(e) (i) (A) (see also 35 IAC 218.407(a) (1) (A)):
  - A. The date and time of preparation, and each subsequent modification, of the batch [35 IAC 218.411(c) (2) (B) (i)];
  - B. The results of each measurement taken in accordance with Condition 1.1.8(a) (See also 35 IAC 218.410(b)) [35 IAC 218.411(c) (2) (B) (ii)];
  - C. Documentation of the periodic calibration of the meter in accordance with the manufacturer's specifications, including date and time of calibration, personnel conducting, identity of standard solution, and resultant reading [35 IAC 218.411(c) (2) (B) (iii)]; and
  - D. Documentation of the periodic temperature adjustment of the meter, including date and time of adjustment, personnel conducting and results [35 IAC 218.411(c) (2) (B) (iv)].
- iii. Pursuant to 35 IAC 218.411(c) (2) (C), if the VOM content of the fountain solution is determined pursuant to Condition 1.1.8(a) (i) (A) (see also 35 IAC 218.410(b) (1) (A)), for each batch of as-applied fountain solution:
  - A. Date and time of preparation and each subsequent modification of the batch [35 IAC 218.411(c) (2) (C) (i)];

- B. Volume and VOM content of each component used in, or subsequently added to, the fountain solution batch [35 IAC 218.411(c) (2) (C) (ii)];
  - C. Calculated VOM content of the as-applied fountain solution [35 IAC 218.411(c) (2) (C) (iii)]; and
  - D. Any other information necessary to demonstrate compliance with the applicable VOM content limits in Condition 1.1.3(e) (i) (A) (see also 35 IAC 218.407(a) (1) (A)), as specified in the source's operating permit [35 IAC 218.411(c) (2) (C) (iv)].
- c. Pursuant to 35 IAC 218.411(d) (2), the Permittee shall collect and record the following information for each cleaning solution used on the affected printing line:
- i. Pursuant to 35 IAC 218.411(d) (2) (C), for each batch of cleaning solution for which the Permittee relies on the vapor pressure of the cleaning solution to demonstrate compliance with Condition 1.1.3(e) (ii) (see also 35 IAC 218.407(a) (4) (B)):
    - A. The name and identification of each cleaning solution [35 IAC 218.411(d) (2) (C) (i)];
    - B. Date and time of preparation, and each subsequent modification, of the batch [35 IAC 218.411(d) (2) (C) (ii)];
    - C. The molecular weight, density, and VOM composite partial vapor pressure of each cleaning solvent, as determined in accordance with Condition 1.1.7(c) (see also 35 IAC 218.409(e)) [35 IAC 218.411(d) (2) (C) (iii)];
    - D. The total amount of each cleaning solvent used to prepare the as-used cleaning solution [35 IAC 218.411(d) (2) (C) (iv)]; and
    - E. The VOM composite partial vapor pressure of each as-used cleaning solution, as determined in accordance with Condition

1.1.7(c) (see also 35 IAC 218.409(e))  
[35 IAC 218.411(d) (2) (C) (v)].

- ii. The date, time and duration of scheduled inspections performed to confirm the proper use of closed containers to control VOM emissions, and any instances of improper use of closed containers, with descriptions of actual practice and corrective action taken, if any [35 IAC 218.411(d) (2) (D)].
- d. Records of the VOM usage for the ink, fountain solution and cleaning solvent for the affected printing line (tons/month and tons/year);
- e. The aggregate monthly and annual VOM emissions from the affected printing line based on the ink and solvent usage, with supporting calculations; and

#### 1.1.10 Reporting Requirements

The Permittee shall promptly notify the Illinois EPA, Compliance Section, of noncompliance of the affected printing line with the permit requirements as follows. Reports shall describe the probable cause of such deviations, and any corrective actions or preventive measures taken:

- a. The Permittee shall notify the Illinois EPA in writing of any violation of Condition 1.1.3(e) (see also 35 IAC 218.407) within 30 days after the occurrence of such violation. Such notification shall include a copy of all records of such violation [35 IAC 218.411].
- b. Emissions of VOM in excess of the limits in Conditions 1.1.6(a) based on the current month's records plus the preceding 11 months within 30 days of such an occurrence.

#### 1.1.11 Operational Flexibility/Anticipated Operating Scenarios

N/A

#### 1.1.12 Compliance Procedures

- a. Compliance with Condition 1.1.3(b) is assumed to be achieved by the work-practices inherent in operation of the affected printing line.

- b. Compliance with Condition 1.1.3(c) is assumed to be achieved by the work-practices inherent in operation of a natural gas-fired press dryer.
- c. Compliance with Conditions 1.1.3(d) and (e) (i) (C) is addressed by proper operation of the oxidizer system, as addressed by Conditions 1.1.5 and 1.1.8(b).
- d. Compliance with the emission limits in Condition 1.1.6(a) shall be based on the recordkeeping requirements in Condition 1.1.9 and the emission factors and formulas listed below:

Ink VOM Emissions ( $E_I$ ):

$$E_I = (M_I W_I / 100) (1 - R_I / 100) (J_I / 100) [1 - (K / 100)]$$

Fountain Solution VOM Emissions ( $E_F$ ):

$$E_F = (M_F W_F / 100) (J_F / 100) [1 - (K / 100)] + (M_F W_F / 100) [1 - (J_F / 100)]$$

Manual Cleaning Solvent VOM Emissions ( $E_M$ ):

$$E_M = (M_M W_M / 100) (1 - R_M / 100)$$

Automatic Cleaning Solvent VOM Emissions ( $E_A$ ):

$$E_A = (M_A W_A / 100) (J_A / 100) [1 - (K / 100)] + (M_A W_A / 100) [1 - (J_A / 100)]$$

Total VOM Emissions ( $E_T$ ):

$$E_T = E_I + E_F + E_M + E_A$$

Where:

- $M_I$  = Weight of ink used (pounds);
- $W_I$  = Weight percent VOM in ink (wt. %);
- $R_I$  = Percent of ink VOM retained in printed product (20%);
- $K$  = Control efficiency of afterburner\* (percent);
- $J_I$  = Capture efficiency of dryer and control system for ink VOM (100%);
- $M_F$  = Volume of fountain solution used, as applied (gallons);

$W_F$  = VOM content of fountain solution, as applied (lb VOM/gallon);

$J_F$  = Capture efficiency of dryer and control system for fountain solution VOM (70%);

$M_M$  = Volume of manual cleaning solvent used (gallons);

$W_M$  = VOM content of manual cleaning solvent (lb VOM/gallon);

$R_M$  = Percent of manual cleaning solvent VOM retained in wipers (50%);

$M_A$  = Volume of automatic cleaning solvent used (gallons);

$W_A$  = VOM content of automatic cleaning solvent (lb VOM/gallon);

$J_A$  = Capture efficiency of dryer and control system for automatic cleaning solution VOM (40%);

\* Appropriate efficiency based upon results of approved stack test data.

2.0 This construction permit authorizes the Permittee to operate the affected printing line until the next reopening of the CAAPP permit subject to certain conditions, such as timely completion of testing and submittal of the application for revision of the CAAPP permit.

If you have any questions on this, please call Ricardo Ng at 217/782-2113.

Donald E. Sutton, P.E.  
Manager, Permit Section  
Division of Air Pollution Control

DES:RNG:jar

cc: Region 1

Attachment 1

Nonattainment NSR Applicability

Contemporaneous Time Period of 2000 through 2004

**Table I - Emissions Increases and Decreases Associated With The Proposed Modification**

<u>Item of Equipment</u>	<u>Potential Emissions (Tons/Yr)</u>	<u>Emissions Increase (Tons/Year)</u>
Press 37	34.1	34.1

**Table II - Source-Wide Creditable Contemporaneous Emission Increases**

<u>Item of Equipment</u>	<u>Commencement of Operation Date</u>	<u>Emissions Increase (Tons/Year)</u>	<u>Permit Number</u>
Press 36	2003	30.66	01110004

**Table III - Source-Wide Creditable Contemporaneous Emission Decreases**

<u>Item of Equipment</u>	<u>Commencement of Operational Change Date</u>	<u>Emissions Decrease (Tons/Year)</u>	<u>Permit Number</u>
Press 30	2000	13.41	99100078
Press 24	2001	1.75	01110004
Press 26	2002	13.59	01110004
Press 29	2001	3.26	01110004
Press 32	2002	28.56	01110004
Oxidizer Efficiency	2001		00090023
Improvements on Presses			00010070
27, 31, 33, 34		<u>4.66</u>	01040058
TOTAL		65.23	

**Table IV - Net Emissions Change**

	<u>(Tons/Year)</u>
Increases and Decreases Associated With The Proposed Modification	34.1
Creditable Contemporaneous Emission Increases	30.66
Creditable Contemporaneous Emission Decreases	<u>- 65.23</u>
	-0.47

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